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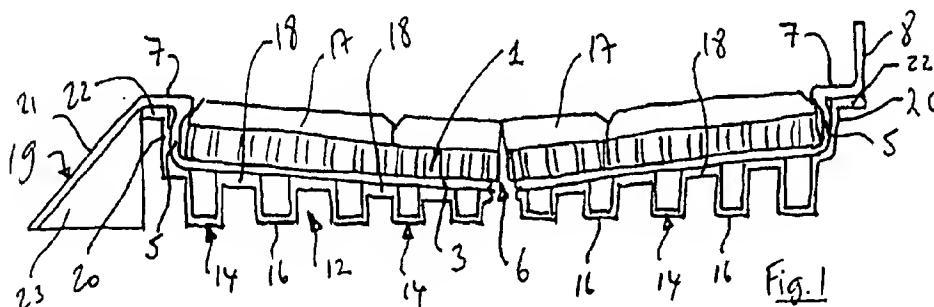
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(54) Shower tray arrangement

(57) A shower tray arrangement comprises a shallow tray (1) having a base (3) and a peripheral upstand-

ing side wall (5), and an outer skin (12) which is profiled to render the skin rigid and is secured to the underside of the shallow tray (1).



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## Description

[0001] This invention relates to a shower tray arrangement for example for disabled persons.

[0002] There is known from EP-A-0 872 204 a shower arrangement for disabled persons in which a perforated surface is supported above a base of a shower tray by means of protrusions extending downwardly from the underside of the perforated surface to engage the base. Such a shower tray has been found to be very effective, but it is preferable to be able to manufacture the tray from sheet material rather than a cast material and this can be difficult to accomplish with sufficient rigidity whilst maintaining a low height for the side wall of the tray.

[0003] It is therefore an object of the present invention to provide a shower tray arrangement such as for disabled persons in which the shower tray is made from reinforced sheet material.

[0004] According to one aspect of the present invention there is provided a shower tray arrangement comprising a shallow tray having a base and a peripheral upstanding side wall, and an outer skin which is profiled to render the skin rigid and is secured to the underside of the shallow tray.

[0005] A lateral rim may be provided around the upper edge of the side wall. An upstand may be provided along on or more sides of the tray.

[0006] A ramp may be provided along one or more edges of the tray to facilitate entry by a wheelchair.

[0007] The side wall of the tray may be formed with an undercut.

[0008] The base of the tray may be inclined downwardly from the edges thereof towards an outlet.

[0009] In order to extract waste water from the tray, a pipe may extend into the tray, the pipe being adapted to be connected to a pump located externally of the tray.

[0010] The outer skin may be formed with a plurality of ribs. The ribs are preferably configured such that they do not extend for any substantial distance in the direction of any of the edges of the tray. For example, the ribs may be substantially straight and arranged at an angle, such as about 45 degrees, to each edge of the tray. The height of the ribs may be adapted such that the outer skin abuts against the underside of the base of the tray between each rib to support the base of the tray and to facilitate securement and such that the lower face of each rib terminates substantially in a single horizontal plane. Thus, where the base of the tray is inclined towards the outlet, the height of the ribs will vary across the underside of the base of the tray.

[0011] The outer skin may be formed with a peripheral upstanding side wall adapted to extend around the peripheral side wall of the tray. The outer skin may additionally be provided with a lateral rim around the upper edge of the side wall, the lateral rim of the outer skin being adapted to abut against the underside of the lateral rim of the tray.

[0012] The outer skin may be secured to the under-

side of the base of the tray by means of an adhesive, such as an acrylic adhesive. The adhesive may incorporate a proportion of elastomer.

[0013] A plurality of tiles may be provided in the tray such that the upper surface of the tiles is substantially level with the rim of the tray at least along part of the side wall thereof. The tiles may be provided with an upper perforated surface. The tiles may be provided with interlocking means to enable the formation of a substantially continuous perforated surface. The tiles may be interlocked in two groups to facilitate removal of the tiles from the tray.

[0014] Alternatively, the perforated surface may be provided by means other than tiles, such as slats or a continuous perforated surface.

[0015] A plurality of support members extend between the base of the tray and the underside of the perforated surface. The support members may be formed in the base of the tray or may extend downwardly from the underside of the perforated surface.

[0016] According to another aspect of the present invention there is provided a trap assembly for waste water or the like comprising a tubular portion having a first (upstream) end and a second (downstream) end, a partial closure arranged in the upper region of the tubular portion in the region of the first end, and a partial closure arranged in the lower region of the of the tubular portion in the region of the second end, partial closures overlapping in a horizontal direction such that waste water or the like is trapped in use between the first and second ends so as to form a seal.

[0017] The partial closures may be inclined such that the lower region of each partial closure is upstream of the upper region of each partial closure.

[0018] The trap assembly may be mounted within a tubular member which is adapted in use to have a lateral portion within which the trap assembly is positioned and an upstream upright portion for connection to an outlet for waste water or the like.

[0019] The trap according to the second aspect of the invention may, of course, be used with the shower tray assembly according to the first aspect of the invention.

[0020] For a better understanding of the present invention and to show more clearly how it may be carried into effect reference will now be made, by way of example, to the accompanying drawings in which:

Figure 1 is a cross-sectional view, not to scale, of one embodiment of a shower tray assembly according to the present invention;

Figure 2 is a top plan view, not to scale, of the shower tray assembly shown in Figure 1;

Figure 3 is a bottom plan view, not to scale, of an outer skin for the shower tray of the assembly shown in Figure 1;

Figure 4 is a diagrammatic cross-sectional view of a trap for use with the shower assembly of Figures 1 to 3;

Figure 5 is a top plan view of a tile for use in the shower tray assembly of Figures 1 to 3;

Figure 6 is a bottom plan view of the tile shown in Figure 5;

Figure 7 is a cross-sectional view, not to scale, of another embodiment of a shower tray assembly according to the present invention; and

Figure 8 is a top plan view, not to scale, of the shower tray assembly shown in Figure 7.

[0021] The shower tray assembly shown in Figures 1 to 3 comprises a shallow tray 1 having a base 3, a peripheral upstanding side wall 5 and a rim 7 extending laterally outwardly from the upper edge of the side wall 5. The tray 1 may be made by forming any suitable sheet-form material such as ABS plastics, aluminium or stainless steel.

[0022] The tray 1 is substantially rectangular in the illustrated embodiment and may have internal dimensions of about 1580 mm by 758 mm. However, it should be noted any suitable dimensions may be provided. The side wall 5 may have a height of about 15 mm and a thickness of about 5 mm, the height being adapted to allow ready access by disabled persons confined to a wheelchair. A tray of such dimensions can hold at least 10 litres of water which is adequate in practice even if the water should flow away relatively slowly. The rim may have a width of about 40 mm and the same thickness as the base (about 5 mm).

[0023] The side wall 5 of the tray 1 is inclined inwardly over the base 3 so as to form an undercut 13 below the top lip of the side wall. The purpose of the undercut 13 will be explained in more detail hereinafter.

[0024] The base 3 of the tray is profiled by moulding, pressing or forming the sheet comprising the base such that water received in the tray is directed towards an outlet 6 which is positioned towards one end of the tray. That is, the base of the tray may have a slope such that the outlet 6 is about 5 mm below the lower edges of the side walls 5.

[0025] An upstand 8 is provided around two adjacent edges of the rim 7 to minimise the risk of water leaking between the outer edge of the rim and an adjoining wall (not shown). The upstand 8 may have a height of about 30 mm and the same thickness as the base 3 (about 5 mm).

[0026] The tray 1 by itself is not sufficiently rigid to support the weight of a user, but it has been found that an outer skin 12, suitably profiled and bonded to the tray 1, can confer sufficient rigidity on the combined tray assembly. The outer skin 12 may be made of the same

sheet material as the tray 1 or may be made of any other suitable material. The skin 12 is profiled to incorporate a plurality of ribs 14, the ribs being provided with lower surfaces 16 all in substantially the same horizontal plane and with upper surfaces 18 adapted to engage with the underside of the profiled tray. Thus, the ribs 14 may each have a width of about 20 mm and may be spaced apart by about 15 mm. The height of the ribs 14 may be about 10 mm in the region of the edges of the outer skin 12, decreasing to about 5 mm in the region of the outlet 6 of the base 3 of the tray 1. Moreover, the ribs 14 are configured in the longitudinal direction thereof so as not to extend for any substantial distance in the direction of any of the edges of the tray 1. In the illustrated embodiment the ribs 14 are substantially straight and are arranged substantially at 45 degrees to each of the edges of the tray 1, but this is not essential. Not only may the angle deviate from 45 degrees, but the reinforcing ribs may be curvilinear (for example wavy) or may be formed as a plurality of geometrical shapes such as circular provided the individual shapes overlap in the directions of each of the sides of the tray in order that a line parallel to any side of the tray at any point between opposing edges intersects the reinforcing ribs 14 at a plurality of locations spaced along the length of such line. The outer skin 12 is formed with an aperture in the region thereof corresponding to the location of the outlet 6. This permits the outlet 6 to incorporate a depression of about 5 mm, the depression having a diameter approaching 100 mm.

[0027] The outer skin 12 is formed with a side wall 20 and with a peripheral rim 22, the height of the side wall 20 being such that the upper surface of the peripheral rim 22 engages against the lower surface of the peripheral rim 7 of the tray 1.

[0028] The outer skin 12 may be bonded to the underside of the tray 1 around the periphery thereof and along the upper surfaces of the ribs 14 by means of any suitable adhesive such as an acrylic adhesive. An acrylic adhesive incorporating a proportion of elastomer has been found to be particularly effective.

[0029] The shower tray assembly shown in Figures 1 to 3 is adapted to be supported on a flat surface, such as a floor (not shown). Two adjoining edges of the tray 1, those provided with the upstands 8, are adapted to abut against an adjacent wall (not shown), while the two remaining edges are provided with a ramp 19, for example of suitable non-slip material, to enable a person in a wheelchair to mount the ramp and enter the shower arrangement. In this respect it should be noted the height of the ramp is only about 35 mm and a ramp having a length of about 150 mm provides a sufficiently gentle incline to permit a wheelchair to readily mount the ramp and enter the shower arrangement. The ramp 19 comprises an inclined portion 21 which can be moulded integrally with the tray 1 and a supporting member 23 positioned immediately beneath the inclined portion 21 to provide support. Thus the supporting member 23 has

a substantially triangular cross-section and can be secured by a suitable adhesive (such as that identified above) to the underside of the inclined portion 21 of the ramp 19.

[0030] In situations where it is impossible or impractical to provide a conventional water trap in the surface beneath the shower assembly (such as where the surface comprises reinforced concrete) a pipe 10 may be provided for connection to a pump 15 located externally of the shower tray. The pipe 10 may have a diameter of about 10 to 15 mm and extends along the upper surface of the base 3 of the tray 1 from the outlet 6 to an adjacent corner, for example. The pipe 10 has an inlet within the outlet 6 and the outlet 6 is otherwise closed.

[0031] In other situations where space beneath the tray 1 is restricted, a trap 39 such as that shown in Figure 4 may be employed. The trap 39 has a depth of about 60 mm and can often be inserted in a recess formed in the screed layer conventionally provided on a reinforced concrete floor and can be used in other situations where space is severely restricted. As shown in Figure 4 the trap 39 comprises a conventional bend assembly such as might be provided at the outlet of a shower or a bath and which would lead to a conventional trap. Thus, the trap 39 has a first generally cylindrical portion 41 to be secured to the outlet 6 of the tray 1 and which in use extends generally vertically. The upper end of the portion 41 is provided with an outwardly extending flange 43 on which is received an elastomeric seal 45. Within the first cylindrical portion 41 is a web assembly 47 which supports an internally threaded member 49 substantially on the axis of the generally cylindrical portion 41. An apertured plate 51 is arranged on the upper surface of the outlet 6 and an externally threaded member 53 passes through the centre of the plate 51, through the outlet aperture 6 and is received in the internally threaded member 49. Thus, when the threaded member 53 is tightened the outlet of the shower tray is sandwiched between the apertured plate 51 and the elastomeric seal 45.

[0032] The trap 39 has a second generally cylindrical portion 55 extending laterally from the lower end of the first portion 41 so as to form a substantially right-angle bend. The free end of the second portion 55 is externally threaded for connection to further pipework (not shown) of conventional design. Provided within the second portion 55 is a trap device 57 which may be made of a suitable plastics material and comprises a substantially tubular portion 59 adapted to fit closely within the second portion 55. The tubular portion 59 has a partial closure 61 in the upper region thereof at the upstream end of the portion 59 and a partial closure 63 in the lower region thereof at the downstream end (that closest the outlet of the second portion 55) of the portion 59. The ends of the tubular portion 59 may be at an angle such that the lower region of the portion 59 is upstream of the upper region thereof and the partial closures 61 and 63 may be in the form of inclined part-circular plate members

which terminate in a substantially horizontal lower (closure 61) or upper (closure 63) edge. One or both of the partial closures 61 and 63 extend beyond the central axis of the portion 59 so that the two edges overlap to form a water trap. The inclined closures not only assist the flow of waste water through the trap but additionally facilitate cleaning of the trap by the insertion of a fine brush (not shown), for example having short nylon bristles, through the apertured plate 51.

[0033] By way of example, the portion 59 may have an axial length of about 20 to 30 mm and an external diameter of about 38 mm. The partial closures may extend upwardly or downwardly by about 20 to 25 mm so as to form the overlap. The tubular portion 59 may be secured within the second portion 55 by a ring of sealant simply provided around the outer periphery of the tubular portion 59 before it is inserted into the second portion 55. Once the trap 39 has been installed and further piping has been secured to the threaded end of the second portion 55 the further piping serves to retain the tubular portion 59 in position in known manner.

[0034] Positioned within the tray 1 and supported by the base 3 is a plurality of tiles 17 which may be, for example, of plastics material. The upper surface of the tiles is substantially level with the rim of the tray 1 at least along part of the length of the side wall 5 so as to facilitate entry and exit by a person in a wheelchair. The tiles 17 are shown in more detail in Figures 5 and 6 and comprise a perforated upper surface 29, in the present case the perforated upper surface being formed by a plurality of intersecting orthogonal and diagonal rib members 31, and a number of protrusions 33 and 35 extending down from beneath the upper surface to a substantially common plane (where the protrusions engage the base 3 of the tray 1) for supporting the perforated surface 29 above the base of the tray 1 so as to enable water to flow more readily towards the outlet 13 of the tray. Protrusions 33 remote from the edges of the tile may be substantially cylindrical as illustrated, while protrusions 35 around the periphery of the tile may be substantially rectangular as illustrated (although they may also take other shapes, such as cylindrical or part-cylindrical). Protrusions 35 are spaced in a manner which permits engagement with interlocking members 37 which are provided along one or two sides of the tiles in order to permit adjoining tiles to be interlocked. In this way the individual tiles 17 can be locked together to form a safe and continuous perforated surface supported above the base of the tray 1 and which permits ready entry and exit for a person in a wheelchair.

[0035] The individual tiles may be substantially square, for example about 300 mm by 300 mm, the tiles having an overall thickness of about 15 mm, of which about 7.5 mm is occupied by the perforated surface 29 and about 7.5 mm is occupied by the protrusions 33, 35.

[0036] The undercut 13 of the side wall 5 of the tray 1 allows the outer edges of the interlocked tiles to extend beneath the top of the side wall. To facilitate entry into

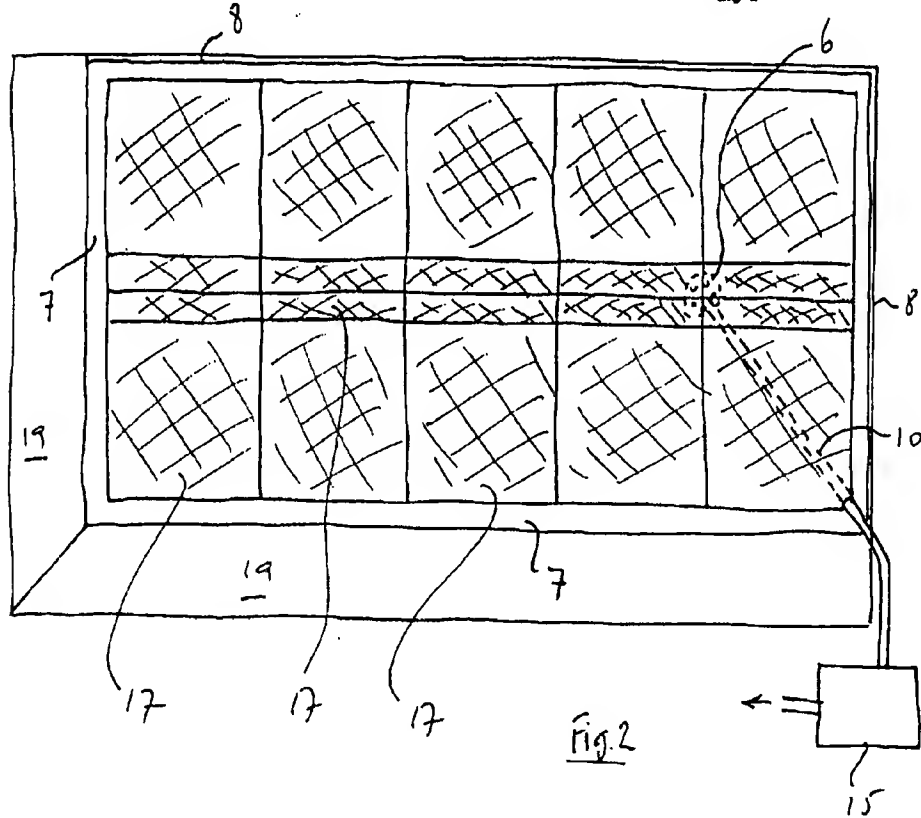
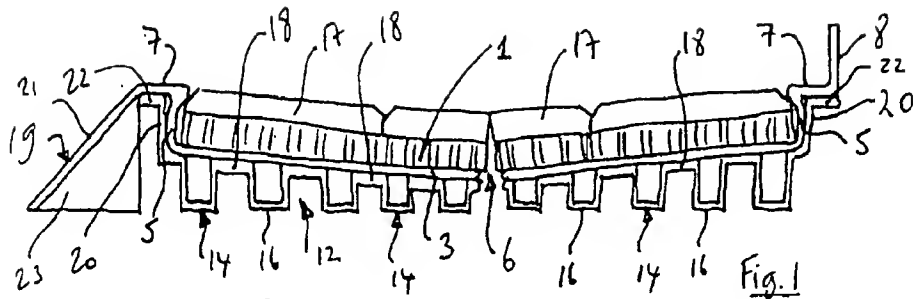
the undercut 13 the edges of the individual tiles 17 may be chamfered on their upper edges. Entry of the edges of the tiles 17 into the undercut 13 ensures the interlocked tiles are retained securely within the tray 1 and do not slide up and over the edges of the tray when a wheelchair enters the shower assembly.

[0037] Substantially across the central region of the tray 1, the tiles 17 are cut as illustrated or are otherwise configured to have no interlocking members. Such an arrangement allows the interlocked tiles 17 to be removed from the tray 1 in two sections to facilitate cleaning of the tiles and of the tray.

[0038] The shower tray assembly shown in Figures 7 and 8 is similar to that shown in Figures 1 to 3 except the shower tray assembly of Figures 7 and 8 is adapted to be recessed into floorboards 9 or the like so as to be supported by floor joists 11. Although it is not entirely clear in the figures, the reinforcing ribs 14 of the outer skin 12 extend at an angle to the longitudinal direction of the floor joists 11 such that a plurality of different ribs 14 extend above each joist 11. In such an embodiment there is no need for a ramp and a wheelchair can roll substantially unimpeded onto the perforated surface of the tiles 17.

#### Claims

1. A shower tray arrangement comprising a shallow tray (1) having a base (3) and a peripheral upstanding side wall (5), and an outer skin (12) which is profiled to render the skin rigid and is secured to the underside of the shallow tray (1).
2. A shower tray arrangement as claimed in claim 1, wherein the side wall (5) of the tray is formed with an undercut (13).
3. A shower tray arrangement as claimed in claim 1 or 2, wherein, in order to extract waste water from the tray (1), a pipe (10) extends into the tray, the pipe being adapted to be connected to a pump (15) located externally of the tray (1).
4. A shower tray arrangement as claimed in any preceding claim, wherein the outer skin (12) is formed with a plurality of ribs (14).
5. A shower tray arrangement as claimed in claim 4, wherein the ribs (14) are configured such that they do not extend for any substantial distance in the direction of any of the edges of the tray (1).
6. A shower tray arrangement as claimed in claim 5, wherein the ribs (14) are substantially straight and arranged at an angle to each edge of the tray (1).
7. A shower tray arrangement as claimed in claim 6, wherein the ribs (14) are arranged at an angle of about 45 degrees to each edge of the tray (1).
8. A shower tray arrangement as claimed in any one of claims 4 to 7, wherein the height of the ribs (14) is adapted such that the outer skin (12) abuts against the underside of the base of the tray between each rib to support the base (3) of the tray and to facilitate securement and such that the lower face of each rib (14) terminates substantially in a single horizontal plane.
9. A shower tray arrangement as claimed in any preceding claim, wherein the outer skin (12) is secured to the underside of the base (3) of the tray by means of an adhesive, for example an acrylic adhesive, which adhesive may incorporate a proportion of elastomer.
10. A shower tray arrangement as claimed in any preceding claim, wherein a plurality of tiles (17) is provided in the tray such that the upper surface of the tiles is substantially level with the rim of the tray at least along part of the side wall thereof.
11. A shower tray arrangement as claimed in claim 10, wherein the tiles (17) are provided with an upper perforated surface.
12. A shower tray arrangement as claimed in claim 10 or 11, wherein the tiles (17) are provided with interlocking means (35, 37) to enable the formation of a substantially continuous perforated surface, the tiles being interlocked for example in two groups to facilitate removal of the tiles from the tray.
13. A shower tray arrangement as claimed in any one of claims 1 to 9 and including means defining a perforated surface (29) substantially level with the rim of the tray at least along part of the side wall thereof, the perforated surface comprising, for example, slats or a continuous perforated surface.
14. A shower tray arrangement as claimed in claim 13, wherein a plurality of support members (33, 35) extend between the base of the tray and the underside of the perforated surface (29), the support members being formed in the base of the tray and/or extending downwardly from the underside of the perforated surface.



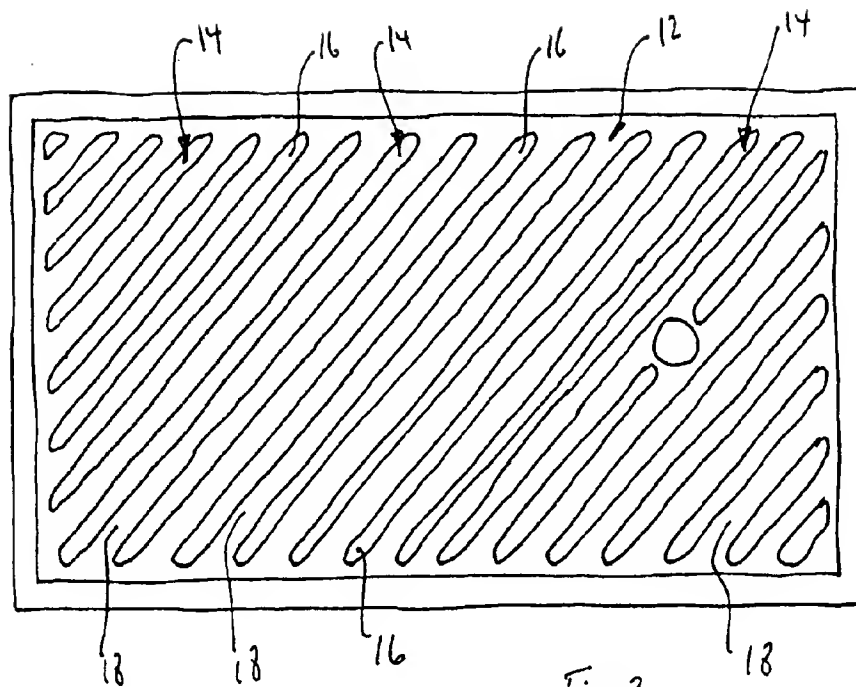


Fig. 3

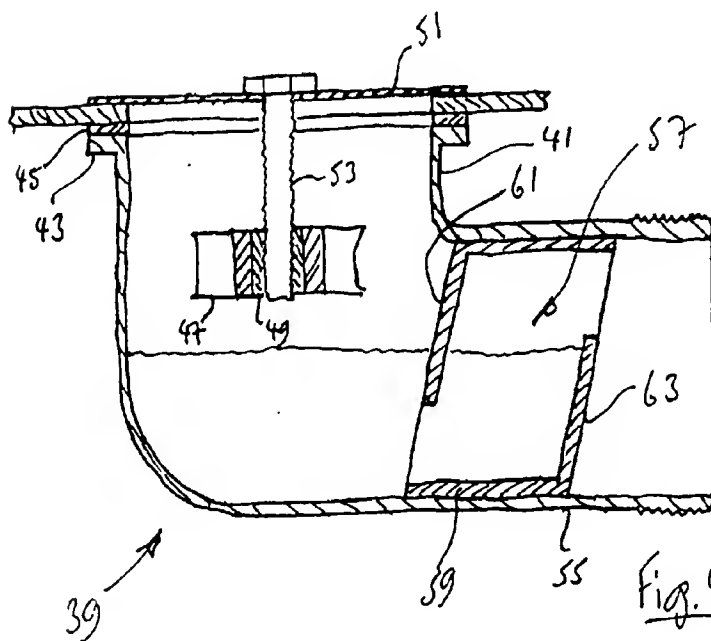


Fig. 4

